USSR/Organic Chemistry. Synthetic Organic Chemistry.   E-2

Abs Jour   : Ref Zhur - Khimiya, No. 8, 1957, 26691.

I were added to a solution of 135 g of II and 600 mlit of CH_3OH in 3 to 4 hours (at 0 to 5°). After the complete disappearance of active chlorine, Na_2SO_3 is added, all is distilled, the oil is separated and fractionated, a mixture of IIIa and IVa is received. A mixture of IIIb and IVb forming at the action of ethylhypochlorite on II was obtained under the same conditions, and the structure of IIIb and IVb was proved analogously with corresponding C_2H_5O analogues of V to X (Vb to Xb). The substances, boiling points/mm, n^{20}_D, d_4^{20} are enumerated: Va - 88

to 88.5, 1.3840, 0.7546; Vb - 105 to 106, 1.3880, 0.7536; VIIa - 48 to 48.5/20, 0.9639; VIIb - 60 to 60.5/20, 1.4230, 0.9359; VIIIa -

Card 5/6

USSR/Organic Chemistry.   Synthetic Organic Chemistry.   E-2

Abs Jour   :   Ref Zhur - Khimiya, No. 8, 1957, 26691.

89 to 90, 1.4062, 0.7888; IXa - 105 to 107,
1.4535, 0.8350; IXb - 124 to 126, 1.4500,
0.8294; Xa - 52.5 to 53.5/20, 1.4220, 0.882;
Xb - 76.5 to 77/20, 1.4235, 0.8564. See report
LXII in RZhKhim, 1957, 22847.

Card 6/6

ZIRYANOVA, T.A

USSR/Organic Chemistry. Synthetic Organic Chemistry.   E-2

Abs Jour   : Ref Zhur - Khimiya, No. 8, 1957, 26692.

Author   : Zyryanova, T.A.; Petrov, A.A.
Inst   :
Title   : Research in Region of Conjugate Systems.
               LXIV. Action of Benzenesulfodibromoamide
               on Piperylene Solutions in Methyl and Ethyl
               Alcohols.

Orig Pub   : Zh. obshch. khimii, 1956, 26, No. 7, 1918 -
               1926.

Abstract   : At the action of benzenesulfodibromoamide (I)
               on piperylene (II) solutions in methanol and
               ethanol, the addition of methylhypobromite,
               or correspondingly, of ethylhypobromite to II
               in the 3,4 and 1,4 positions takes place; the
               molar ratio of the 3,4 and 1,4 adducted matters
               is 2.5 : 1 to 3 : 1. II produces considerably

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USSR/Organic Chemistry.   Synthetic Organic Chemistry.   E-2

Abs Jour   : Ref Zhur - Khimiya, No. 8, 1957, 26692.

more 1.4 adducted matter than the earlier
investigated divinyl. On the other hand,
alkylhypobromites adjoin II in the 3,4 posi-
tion to a greater degree than the earlier in-
vestigated alkylhypochlorites. 40 g of a
mixture (A) with the boiling point at 65 to
71°/20 mm, of 4-bromo-3-metoxypentenol-2 (III)
and 1-bromo-4-metoxypentenol-2 (IV) was re-
ceived from 68 g of II (70 to 75% of the trans-
form) and 94.5 g of I in 250 mlit of CH_3OH
under conditions described earlier; besides,
methylpropenylketone forming obviously from III
was separated. CH_3COOH and $BrCH_2COOH$ were ob-
tained by the ozonization of A. 56 g of A
with 28 g of KOH in 180 mlit of CH_3OH was
heated 9 hours. 7.5 g of 2-metoxypentadiene-
1,3 (VI) (mixture of cis-trans form) (boiling

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USSR/Organic Chemistry.   Synthetic Organic Chemistry.   E-2

Abs Jour   : Ref Zhur - Khimiya, No. 8, 1957, 26692.

point 106.5 to 107.5°, $n^{20}D$ 1.4555, $d_4^{20} =$

0.8350) and 1.5 g of dimethyl ester of pentene-
2-diol-1,4 (VII) boiling point 53 to 56°/20 mm,

$n^{20}D = 1.4250$, $d_4^{20} = 0.9058$ were separated. The

molar ratio of VI (forming from III) and VII
(forming from IV) is about 2.5 to 1. 2.1 g of

V, boiling point 120 to 121°, $n^{20}D = 1.4355$, $d_4^{20} =$

0.8654, was obtained by shaking 5 g of VI with
50 mlit of 5% H_2SO_4; 2,4-dinitrophenylhydra-
zone, boiling point 157 to 158° (from alcohol).
58 g of A in 200 mlit of CH_3OH was hydrogenated
on 20 g of powdered Ni and 25 g of $CaCO_3$ (15°,

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USSR/Organic Chemistry.   Synthetic Organic Chemistry.   E-2

Abs Jour   :   Ref Zhur - Khimiya, No. 8, 1957, 26692.

6 hours, initial pressure 70 at), the frac-
tions (a) at 87 to 90° at normal pressure
(5 g) and (b) at 63 to 66°/a0 mm (28 g) were
separated. At the hydrogenation of (a) on
colloid Pt, $C_3H_7CH(OCH_3)CH_3$, boiling point
88 to 88.5°, $n^{20}D = 1.3485$, $d_4^{20} = 0.7548$, was

formed; (b) was hydrogenated repeatedly and
after the following bromination, 1-bromo-2-
metoxypentane, boiling point 63.5 to 64°/20 mm,

$n^{20}D = 1.4509$, $d_4^{20} = 1.2410$, was obtained;

under the action of KOH in alcohol, 1-bromo-
2-metoxypentane produced $C_3H_7C(OCH_3)=CH_2$,
boiling point 89 to 90°, $n^{20}D = 1.4062$,

Card 4/6

USSR/Organic Chemistry. Synthetic Organic Chemistry.   E-2

Abs Jour : Ref Zhur - Khimiya, No. 8, 1957, 26692.

d_4^{20} = 0.7917. By a reaction between 136 g

of II (70 to 75% of the trans form) and 190 g
of I in 600 mlit of C_2H_5OH, 98.7 g of a crude
mixture of bromoesters (B) was produced, the
major part of which was distilled at 64 to
72^0/10 mm. The composition of B was investi-
gated in the same manner as A. At the inter-
action of B with KOH in alcohol, 2-ethoxy-
pentadiene-1,3 (VIII) (mixture of cis and trans
forms), boiling point 124.5 to .25.5°, $n^{20}D$ =

1.4490, d_4^{20} = 0.8244, and VII were received.

The hydrogenation of B resulted in $C_3H_7CH(OC_2H_5)$-
CH_3, boiling point 105 to 106°, $n^{20}D$ = 1.3880,

Card 5/6

USSR/Organic Chemistry. Synthetic Organic Chemistry.   E-2

Abs Jour : Ref Zhur - Khimiya, No. 8. 1957, 26692.

d_4^{20} = 0.7565, and 1-bromo-2-metoxypentane,

boiling point 58 to 59°/10 mm, which produced
pentene-1 after treatment with Zn dust. Pure
cis forms of VI, boiling point 105 to 105.5°,
$n^{20}D$ 1.4570, d_4^{20} = 0.8403, and of VIII, boiling

point 124 to 124.5°, $n^{20}D$ = 1.4530, d_4^{20} = 0.8294,

were received by the introduction of pure cis-
II into the reaction with I in CH_3OH and C_2H_5OH.

Card 6/6

ZYRYANOVA, T.A.; PETROV, A.A.

Investigations in the field of conjugated systems. Part 66: The action of benzosulfodichloro- and benzosulfodibromoamide on alcohol solutions of isoprene. Zhur. ob. khim. 26 no.8:2189-2195 Ag '56.

(MLRA 10:11)

1. Leningradskiy Tekhnologicheskiy institut imeni Lensoveta.
(Amides)   (Isoprene)

ZYRYANOVA, T.A.; PETROV, A.A.

Research in the field of conjugate systems. Part 64. Effect of
benzosulfobromamide on piperylene solutions in methyl and ethyl
alcohols. Zhur.ob.khim. 26 no.7:1918-1926 Jl '56.

(MIRA 9:10)

1. Leningradskiy tekhonologicheskiy institut imeni Lensoveta.
(Amides) (Piperylene)

L 39715-66   EWP(j)/EWT(m)/T   IJP(c)   RM/WW/GD-2

ACC NR: AF6007964   (A)   SOURCE CODE: UR/0191/66/000/003/0017/0019

AUTHOR: Nikolayev, A. F.; Van Er-Ten; Zyryanova, T. A.; Balayev, G. A.; Lebedeva, E.V.; Afanas'yeva, K. S.

ORG: none

TITLE: Epoxy resins from derivatives of triphosphonitrile chloride

SOURCE: Plasticheskiye massy, no. 3, 1966, 17-19

TOPIC TAGS: epoxy plastic, organic synthetic process, heat resistance, thermoplastic material

ABSTRACT: The authors studied the preparation of thermoplastics which could be made from low-molecular-weight compounds during the final preparation of an article. Hexa-glycidyl hexa-m-oxyphenylenetriphosphonitrile (ES-7) was prepared by the reaction of triphosphonitrile chloride with m-dihydroxybenzene in a basic medium:
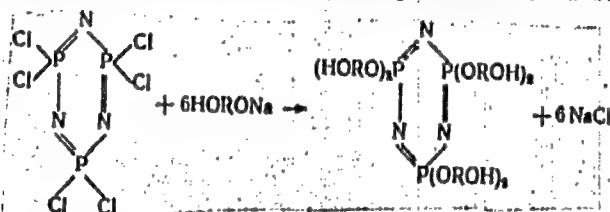
Card 1/2   UDC: 678.85

L 39715-66

ACC NR: AP6007964   2

and a subsequent reaction with epichlorohydrene. The reaction was performed either
heterogeneously in toluene or xylene or homogeneously in an absolute ethanol-toluene
mixture. Maleic anhydride (40%) was used successfully as the hardening agent, but the
plastic produced had a low thermal stability. Hardening at 180C for 15-20 hr without
any hardening agent produced thermoplastics resisting temperatures of 190-230C, hav-
ing a 350-400 kg/cm^2 and 25-30 kg/mm^2 stability of adhesion-to-metal band and Vickers
hardness, respectively. ES-7 did not burn when exposed to 100-1100C for 20 sec.

ES-7
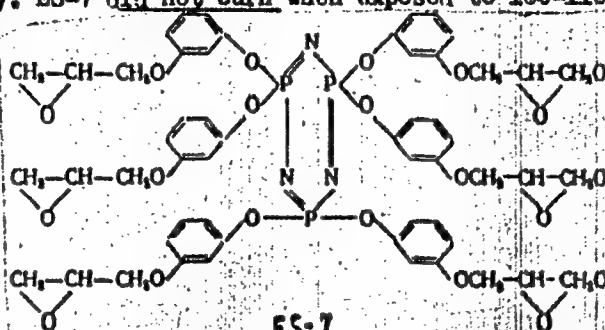
Orig. art. has: 6 fig.

SUB CODE:07,11/SUBM DATE: none/ ORIG REF: 003

Card 2/2

ZYRYANOVA, T. A.

ZYRYANOVA, T. A.--"The Effect of Benzosulfodichloramide and Benzosulfodibro-
mamide on Solutions of Piperylene and Isoprene in Methyl and Ethyl
Alcohol." Min Higher Education USSR. Leningrad Order of Labor Red
Banner Technological Inst imeni Leningrad Soviet. Leningrad, 1955.
(Dissertation for the Degree of Candidate in Chemical Science).

SO. Knizhnaya letopis'
No 2, 1956.

L 43766-66   EWT(m)/T/EWP(j)   IJP(c)   WW/RM   SOURCE CODE: UR/0413/66/000/015/0088/0088

(A)

ACC NR: AP6029919

INVENTOR: Nikolayev, A. F.; Zyryanova, T. A.; Balayev, G. A.; Voronova, N. A.;
Grigor'yeva, G. M.

ORG: none

TITLE: Preparative method for phosphorus-containing epoxy resins. Class 39,
No. 184443 [announced by the Leningrad Technological Institute im. Lensovet
(Leningradskiy tekhnologicheskiy institut)]

SOURCE: Izobret prom obraz tov zn, no. 15, 1966, 88

TOPIC TAGS: fire resistant material, epoxy plastic

ABSTRACT: An Author Certificate has been issued for a preparative method for phos-
phorus-containing epoxy resins based on phosphonitrile chloride oligomers and epoxy
compounds in the presence of caustic soda. To improve the fire resistance of the
resins and to simplify the method, the phosphonitrile chloride oligomers are condensed
with glycidol.   [SM]

SUB CODE: 11/   SUBM DATE: 09Jul64/   ATD PRESS: 5008

UDC: 678.64'42   678.85

Card 1/1 ЉМ

ZYRYANOVA, V. G., Cand Med Sci, "On the reactivity of tis-sue elements of the skin in the focus of aseptic inflamma-tion under the effect of mud from the Ebeyta and Ul'dzhay lakes of Omskaya Oblast. [Experimental histological investigation study on white rats]." Novosibirsk, 1961. (Novosibirsk State Med Inst).

(KL-DV, 11-61, 227).

KLYAROVSKIY, V.M.; GUSEV, G.M.; ARKHIPENKO, D.K.; GOLOSOV, S.I.;
ZYRYANOVA, Ye.M.

Practice in modeling the weathering process of micas. [Trudy]
Inst. geol. i geofiz. Sib. otd. AN SSSR no.32:63-74 '65.
(MIRA 18:9)

CA

Deaerator mixer.   S. S. Kutateladze and V. A. Zysid
Russ. 55,977, Oct. 31, 1939.   Construction details.

ZYSIN, V.A., kandidat tekhnicheskikh nauk.

Efficient turbine units for heating and power plants. Vest.mash. 33 no.11:
10-16 N '53. (MLRA 6:12)
(Turbines)

ZYSIN, V.A., dotsent

Graphic and analytic method for calculating one-dimensional flows
of a compressible fluid. Trudy LPI no.2:200-214 '54.   (MLRA 8:8)
        (Aerodynamics) (Turbomachines)

— Y~IN, - - |-

AID P - 1327

Subject   :   USSR/Engineering

Card 1/1   Pub. 110-a - 9/19

Authors   :   Zysin, V. A., Zysina-Molozhen, L. M., Kand. of Tech. Sci.,
                 Polyakov, K. S. and Shapiro, I. C., Engineers

Title   :   Interferometrical study of a flow around turbine bladings
                 at trans-and supersonic speed

Periodical   :   Teploenergetika, 2, 38-42, F 1955

Abstract   :   The results of interferometrical studies are outlined con-
                 cerning the flow at trans- and supersonic speed around
                 turbine bladings at different values of the inflow angle
                 and of the pitch. Based on experimental data of a two-
                 dimensional flow some considerations are presented rela-
                 tive to the most favorable parameters of the bladings
                 analyzed from the point of view of blade losses. Photos,
                 charts, 2 Russian references (1953-1954).

Institution :   Central Scientific Research Institute of Boilers and
                 Turbines

Submitted   :   No date

LEVIN, Mark Iosifovich,; ZYSIN, V.A., dotsent, nauchnyy redaktor; DZHALABEKOVA, L.A., otvetstvennyy redaktor; SUSLENNIKOVA, N.M., tekhnicheskiy redaktor.

[Motors; from the water wheel to the atomic engine] Mashina-dvigatel'; ot vodianogo kolesa do atomnogo dvigatelia. Leningrad, Gos.izd-vo detskoi lit-ry M-va prosv.RSFSR, 1957. 222 p. [Microfilm]

(MIRA 10:4)

(Motors)

ZYSIN, V.A.; MIKHAYLOV, P.M.

Efficient operation of the gas-turbine unit in a thermal network.
Nauch.-tekh. inform. biul. LPI no.10:3-7 '58.   (MIRA 14:3)
(Electric power plants)
(Gas turbines)

ZYSIN, V. A.

P. 3

PHASE I   BOOK EXPLOITATION   SOV/3909

Leningrad. Politekhnicheskiy institut

Energomashinostroyeniye (Power-Machinery Construction) Moscow,
    Mashgiz, 1960. 163 p. (Series: Its: Trudy, No. 204) Errata
    slip inserted. 1,600 copies printed.

Sponsoring Agency: RSFSR. Ministerstvo vysshego i srednego spetsial'-
    nogo obrazovaniya.

Resp. Ed.: V.S. Smirnov, Doctor of Technical Sciences, Professor;
    Ed.: V.I. Bulanin, Candidate of Technical Sciences, Docent; Tech.
    Ed.: P.S. Frumkin; Managing Ed. for Literature on the Design and
    Operation of Machinery (Leningrad Division, Mashgiz): F.I. Feti-
    sov, Engineer.

PURPOSE: This book is intended for workers at scientific research
    institutes and factory design offices. It may also be useful to
    students of advanced courses and aspirants specializing in
    power-machinery construction.

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Power-Machinery Construction

SOV/3909

COVERAGE: This collection of 17 articles deals with analyses of gas-turbine installations and theoretical and experimental investigations of the operation of power and transportation machinery, including turbines, compressors, and internal-combustion engines. A description is given of recent theoretical and experimental investigations undertaken by the Department of Power-Machinery Construction, Leningradskiy politekhnicheskiy institut (Leningrad Polytechnical Institute). The investigations include analyses of parameters for insuring high economy of operation and the perfecting of methods of calculating and designing new power equipment. References follow several of the articles.

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Power-Machinery Construction   SOV/3909

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30238

S/145/60/000/002/006/020
D221/D302

26.3220

AUTHOR: Zysin, V.A., Candidate of Technical Sciences

TITLE: Power characteristics of gas turbine installation operating with the addition of steam

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Mashinostroyeniye, no. 2, 1960, 59 - 65

TEXT: There are two mixed thermal units utilizing both gas and steam: one uses products of combustion in steam installations, the other has a direct steam intake for gas turbines. This combination should be regarded as a method of improving power characteristics of conventional gas turbines, and was investigated by the Leningradskiy politekhnicheskiy institut (Leningrad Polytechnic Institute) in connection with high power two-shaft ship gas turbines. Calculations indicated that injection of water in the gas flow increases maximum power by 20 %, without modifying dimensions of turbine or compressors. The amount of water should not exceed 4-5 % of the weight of gas intake. In simple installations it requires

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Power characteristics of gas ...

the addition of a water pump only. It is assumed that the evaporated water forms a homogeneous mixture with the gas. In turbines the downstream maintains its superheated condition at relatively low partial pressure, and, therefore, it is possible to consider the mixture as following the laws of ideal gases. The T-S diagram of Fig. 2 illustrates cycle 1-2-3-4-1 of gas working medium, and curve 5-6-7-8-9-10-5 which corresponds to the Rankin cycle of steam as a working medium. The total coefficient of efficiency without regeneration is given by

$$\eta = \frac{Q_1'}{Q_1} \eta' + \frac{Q_1''}{Q_1} \eta'', \tag{1}$$

where Q_1'' is the heat required for increase of enthalpy of steam, Q_1 is the heat produced by products of combustion, and $Q_1 = Q_1' - Q_1''$ is the heat used in the gas cycle, η' and η'' are efficiency coefficients in gas and Rankin cycles. In the case of regeneration,

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Power characteristics of gas ...

$$\eta = \frac{Q_1' - Q_{reg}^{\overline{I}}}{Q_1} \eta' + \frac{Q_{\overline{I}}'' - Q_{reg}''}{Q_1} \tag{1^1}$$

is used, where Q_{reg}' and Q_{reg}'' are the amounts of heat that are transferred to air and steam in the regenerators. The maximum specific work capacity of a combined gas-steam cycle is 2.6 times greater than in a gas cycle. Due to limiting factors mixed operation of a gas turbine allows a two-fold increase only. Higher initial temperature of gas as well as regeneration and afterburning result in approximately equal advantages for straight and combined operation of a gas turbine. Another method consists in realizing the after-burning and water evaporation by heat of exhaust, instead of in the gas stream in the turbine, as shown in Fig. 4. Gas and steam mixture from turbine GST is fed into boiler-utilizator BU, operating at a pressure close to that of combustion chamber CC. Steam produced is directed into the gas stream and is mixed combustion products in turbine upstream. After giving an equation for defining the amount of water evaporated by a kg of dry gas, the

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Power characteristics of gas ...

coefficient of efficiency of the cycle is presented in

$$\eta = \frac{A\ell' + gh''}{c_p'(t_1 - t_4) + g\, c_p''(t_1 - t_s)}, \qquad (4)$$

where c_p' and c_p'' are average specific heats of gas and steam, h'' is the temperature drop in steam; of the turbine; $A\ell'$ is the specific work of the gas cycle; t_1 is the temperature of mixture in fore-part of the turbine; t_4 is the air temperature in the downstream of compressor; t_s is the temperature in the aft of boiler. Calcula-tions revealed that the efficiency of this arrangement is close to that of a similar gas turbine with a degree of regeneration, equal to $\mu = 0.75$. Superheated steam together with preheated feed water improve the arrangement. The boiler-utilizator has the advantage of being convertible to generate general purpose steam without an additional outlay, and its water consumption is smaller than in in-termediate coolers of conventional gas turbines. Graphs of the re-lative air flow as well as the corresponding coefficient of effi-

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Power characteristics of gas ...

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D221/D302

ciency for this installation are given. The generation of steam in
the boiler-utilizator of practically saltless steam provides a
possibility of using the latter as a medium for cooling the turbine
There are 8 figures.

ASSOCIATION: Leningradskiy politekhnicheskiy institut im. I.M.
Kalinina (Leningrad Polytechnic Institute im. M.I.
Kalinin)

SUBMITTED: December 15, 1959

Card 5/5

87773

S/114/61/000/001/005/009
E194/E355

26.2124

AUTHORS: Zysin, V.A., Candidate of Technical Sciences and
            Davydov, V.S., Engineer

TITLE: External Steam and Evaporative Cooling of Gas-
           turbine Blades

PERIODICAL: Energomashinostroyeniye, 1961, No. 1,
           pp. 28 - 30

TEXT: Cooling of gas-turbine blades through internal ducts
raises great constructional difficulties. Moreover, it is
very difficult to get the heat away from the blade edges in
this way. External methods of cooling gas-turbine blades do
not have these defects. A long time ago Stodola considered
the possibility of having gas nozzles flanked by nozzles
delivering cooling air. However, the power losses were very
high. The prospects of external cooling would be much
improved if a flow containing suspended drops of water could
be used as the cooling agent. American work has described
the injection of water into the gas duct, though in this case
the medium cooling the blade was steam formed by the evaporation

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External Steam and Evaporative Cooling of Gas-turbine Blades

of suspended water in the boundary layer. The unavoidable evaporation of some of the drops outside the boundary layer has some adverse influence on the cooling effect and reduces the efficiency of the cycle.

Additional possibilities of using moistened flows for external cooling are provided in combined steam gas sets in which power is drawn not only from the gas but to a certain extent from steam. It is assumed that the steam is generated by using exhaust heat. In this case steam is delivered to the gas duct at a pressure close to that in the combustion chamber and there is combined expansion of gas and steam in the single gas-steam turbine. Under such conditions all or part of the steam could be applied directly to the blades without mixing with the hot gases. A possible version of such a scheme uses a waste-heat boiler on the turbine exhaust to raise steam which is delivered to the turbine along with the gas from the combustion chamber. The gas and steam are delivered to the turbine through separate groups of nozzles.

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External Steam and Evaporative Cooling of Gas-turbine Blades

It may be assumed that with a small number of stages the
steam and gas flows can be kept reasonably separate in the
turbine. However, this is not possible in turbines with
many stages where the steam and gas will mix fully.
The combined ideal cycle corresponding to this case is
described and discussed. This scheme is claimed to have
several advantages over those in which water is injected
directly into the gas duct. The water formed during the
expansion of saturated steam in the turbine will contain
practically no salts that might form deposits in the turbine.
Eq. (3) is then derived for the ratio of the temperature
difference between the gas and the blade to that between
the steam and the blade. By making calculations on several
variants of the proposed steam/gas turbine circuit it was
found that the blades of the first ring could be cooled by
50-80 $^\circ$C. In practice, there would be additional losses due
to the different values of relative rates of flow of gas and
steam in the working blades. In single-stage turbines these
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External Steam and Evaporative Cooling of Gas-turbine Blades

losses may be avoided by appropriately increasing the pressure
in the waste-heat boiler relative to the pressure in the
combustion chamber. A variant of blade cooling is then
suggested in which the blades have "two storeys" with steam
flowing through the parts of the blade nearer to the shaft
to keep it and the blade roots cool, and gas flowing through
the parts of the blade further away from the shaft. Here,
the cooling action of dry steam is quite sufficient since
the process of cooling of the runner blades is limited by the
thermal conductivity. For schemes with partial delivery of
steam and gas to the turbine the above mentioned reduction of
blade temperature by 50 - 80 °C may be insufficient considering
the decrease in turbine efficiency. In this case the improve-
ment of heat exchange by wetting the steam flow becomes of
particular importance. The calculation of cooling processes
with external flow, over the blades, of dry steam can obviously
be based on the usual procedure used for gas flows. Data of

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External Steam and Evaporative Cooling of Gas-turbine Blades

heat exchange in a wet steam flow are not available.
Concerning cooling by water injection into a gas flow, the
only published data indicate the possibility of achieving
blade temperature reductions of 300 - 400 ^{o}C but there is
no justification for extending these results to other
conditions. The only experimental work on heat transfer
with two-phase flow over a cylindrical tube was carried out
by R.Z. Alimov but his test conditions were so unrelated
to the cooling of turbine blades by suspended water as to be
difficult to use.
A systematic investigation of heat exchange in application to
the problem of external cooling of blades by suspended
moisture would apparently involve tests in the following
sequence: study the influence of suspended water on heat
exchange of a compressible flow over the outside of a single
body; make experiments on blade profiles under static
conditions and proceed to tests on rotating machines.

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S/114/61/000/001/005/009
E194/E355

External Steam and Evaporative Cooling of Gas-turbine Blades

Some results are then given of heat-transfer investigations
during the flow over a single cylinder of a compressible two-
phase substance. The data for cooling of this single cylinder
are conveniently compared with available data for single-
phase flows. Moreover, existing experimental material can
indicate the rate of cooling of the leading edge of the
turbine blades.
Investigations of heat exchange during flow over a single
cylinder were carried out with equipment illustrated
schematically in Fig. 4. The rod was installed directly in
front of the nozzle and heated electrically. Moisture was
injected into the flow through a nozzle. Measurements were
made of the flow of dry steam or air and of the water injected
through the nozzle, and of the necessary temperatures,
pressures and head at the nozzle. Tests were first made with
superheated steam and dry air and a relationship between the
Nusselt and Reynolds numbers was constructed. Agreement with

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External Steam and Evaporative Cooling of Gas-turbine Blades

the work of previous authors was found to be good. Then the
flow was moistened and further tests were made. Some of
the results are plotted in Fig. 5 and the indications are that
a temperature reduction of 230 - 450 $^{\circ}$C might be expected. A
number of tests were made when the steam delivered to the nozzle
was dry saturated. In such cases the isoentropic expansion
corresponded to a moisture droplet content at the nozzle of
3 - 7%. However, the character of the heat exchange was no
different from that in a flow of dry slightly superheated
steam. There is thus reason to suppose that all the moisture
is apparently evaporated during retardation in the boundary
layer. It is concluded that external cooling of the gas-
turbine blades can be effective, particularly at the leading
edges of the blades, without great structural difficulties.
In addition to water injection into the gas flow, use may be
made of various systems of steam cooling associated with steam

Card 7/8

87773

S/114/61/000/001/005/009
E194/E355

External Steam and Evaporative Cooling of Gas-turbine Blades

generation in combined steam gas schemes. The steam cooling
system with "two-storey" blades requires no moistening of
the cooling steam.
There are 5 figures and 10 references: 6 Soviet and
4 non-Soviet.

Card 8/8

MIKHAYLOVSKIY, Georgiy Andreyevich; ZYSIN, V.A., kand. tekhn. nauk,
retsenzent; ARNOL'D, L.V., prof., red.; MITARCHUK, G.A., red.
izd-va; POL'SKAYA, R., tekhn. red.

[Thermodynamic analysis of processes in steam-gas mixtures]
Termodinamicheskie raschety protsessov parogazovykh smesei.
Moskva, Mashgiz, 1962. 183 p.   (MIRA 15:6)
                    (Thermodynamics)

PALEYEV, I.I., prof.; STRAKHOVICH, K.I., prof.; AGAFONOV, Ye.A., dotsent;
    ZYSIN, V.A., dotsent

"Principles of the theory of heat transfer" by V.S. Zhukovskii.
Reviewed by I.I. Paleev and others. Izv. vys. ucheb. zav.; energ. 5
no.6:128-129 Je '62.   (MIRA 15:6)

1. Leningradskiy politekhnicheskiy institut im. M.I.Kalinina.
        (Heat—Transmission)   (Thermodynamics)
                    (Zhukovskii, V.S.)

ZYSIH, V.A., kand. tekhn. nauk; ZAYTSEV, S.S., inzh.; PLATONOVA, S.G., inzh.;
ERLIKH, V.A., inzh.

Construction of an ejector system for a large furnace with a
shaft-type impact mill. Teploenergetika 11 no.9:42-44 S '64.
(MIRA 18:8)

1. Leningradskiy politekhnicheskiy institut imeni M.I.Kalinina.

ZYSIN, V.A., dokten tekhn.nauk; DAVIDOV, V.S., insh.

Heat emission of a flow about a cascade of blades carrying disposded moisture. Energomachinostroenie 11 no.8:40-41 Ag '65.
(MIRA 18:10)

L 47466-66   EWT(m)/EWP(w)/EWP(v)/T-2/EWP(k)/EWP(f)   IJP(c)   WW/FM

ACC NR: AP6029070   SOURCE CODE: UR/0413/66/000/014/0124/0124

INVENTOR: Kirillov, I. I.; Zysin, V. A.; Osherov, S. Ya.; Arsen'yev, L. V.

ORG: none

TITLE: High temperature steam-gas double-flow turbine. Class 46, No. 184070
[announced by the Leningrad Polytechnical Institute im. M. I. Kalinin
(Leningradskiy politekhnicheskiy institut)]

SOURCE: Izobret prom obraz tov zn, no. 14, 1966, 124

TOPIC TAGS: steam gas turbine, double flow turbine, blade cooling, cooled blade,
gas turbine, turbine, turbine blade
steam

ABSTRACT: The proposed high temperature steam-gas double-flow turbine consists of a
housing containing a centripetal rotor wheel equipped with hollow, cooled blades with
separate flow of channels for the wet (or superheated) steam and the gas. In order
to ensure a maximum temperature gradient in the high temperature range, and to
simplify the design, the blades are made of two parts, forming inlet slots for

Card   1/2

ACC NR: AP7009592

SOURCE CODE: UR/0096/67/000/001/0044/0047

AUTHOR: Kirillov, I. I. (Doctor of technical sciences); Zysin, V. A. (Doctor of technical sciences); Osherov, S. Ya. (Candidate of technical sciences); Arson'yev, L. V. (Candidate of technical sciences); Petrov, Yu. Ye. (Engineer)

ORG: none

TITLE: Selection of optimal parameters for a high temperature steam-gas installation using a plan developed by the central boiler-turbine scientific research institute and the Leningrad Polytechnical Institute

SOURCE: Teplo energetika, no. 1, 1967, 44-47

TOPIC TAGS: thermoelectric power plant, steam turbine, gas turbine, heating engineering, cooling, engine cooling system

SUB CODE: 21,10,13

ABSTRACT: The specific features of a method of calculating the parameters of a steam-gas installation are presented and some results of calculation are outlined. In its simplest variant, the steam-gas installation described provides for attainment of an efficiency of approximately 50% with a gas temperature of 1200°C. The optimal degree of gas pressure increase is 9, which considerably facilitates the problems of cooling the high temperature gas turbine and designing turbine machinery. The efficiency of the dual installation depends very little on the steam parameters. High efficiency values can be produced at a steam temperature of 540°C. With increasing initial gas temperature, the thermal effectiveness of the installation increases. In its simplest variant, the efficiency of the installation reaches 55-56% at a

Card   1/2

UDC: 621.438+621.165.001.24

0930   11.30

ACC NR: AP7009592

temperature of 1500°C. The introduction of intermediate heating of the gas provides a further increase in efficiency. Orig. art. has: 7 figures, 2 formulas and 2 tables. [JPRS: 40,102]

Card 2/2

TRUSHLYAKOV, V.P.; BEREZHINSKIY, A.I.; SPIVAK, M.Ya.; FINOGEYEV, I.A.;
    LIPETS, A.U.; AYZEN, B.G.; KOSTOVETSKIY, D.L.; BOLDZHI, K.I.;
    YAMPOL'SKIY, S.L.; FEDOTOV, D.K.; KIRILLOV, I.I.; OSHEROV, S.Ya.;
    ZYSIN, V.A.; OGLOBLIN, G.A.; KANAYEV, A.A.; BULEGA, S.S.;
    BORUKHMAN, V.A.; IOEL'SON, V.I.

    Inventions. Energ. i elektrotekh. prom. no.3:48-49 Jl-S '64.
                                                    (MIRA 17:11)

KIRILLOV, I. I., doktor tekhn. nauk, prof.; ZYSIN, V. A., kand. tekhn. nauk; OSHEROV, S. Ya., kand. tekhn. nauk

Problem concerning the cooling of a high-temperature gas turbine. Energomashinostroenie 8 no.12:7-10 D '62.
(MIRA 16:1)

(Gas turbines—Cooling)

ZYSIN, V.A.

Calculation of the varying conditions of flow about the cascade
profiles.   Trudy LPI no.221:103-109 '62.   (MIRA 15:9)
                    (Turbines)

ZYSIN, V.A.

Highly maneuverable turbine systems.   Trudy LPI no.221:110-118
'62.   (MIRA 15:9)
   (Interconnected electric utility systems)
   (Gas turbines)   (Electric power production)

ZYSIN, Vladimir Aronovich; KIRILLOV, I.I., prof., retsenzent;
ERLIKH, V.A., inzh., red.; SOBOLEVA, Ye.M., tekhn. red.

[Composite steam-gas systems and their operating cycles]
Kombinirovannye parogazovye ustanovki i tsikly. Moskva,
Gosenergoizdat, 1962. 185 p.   (MIRA 16:5)
    (Thermodynamics) (Electric power plants)
              (Heat—Transmission)

Theory of nuclear fission. Ya. B. Zel'dovich and Yu.
A. Zysin. *J. Exptl. Theoret. Phys.* (U. S. S. R.) 10, 831-4
(1940).—Theoretical-mathematical. The disintegration
to two similar nuclei is discussed.

Bernard Lewis

P. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

SOV/89-5-4-9/24

AUTHORS: Antropov, G. P., Zysin, Yu. A., Kovrizhnykh, A. A., Lbov, A. A.

TITLE: Reaction Cross Section $U^{238}(n,2n)U^{237}$ With Neutrons of an Energy of 15 MeV (Secheniye reaktsii $U^{238}(n,2n)U^{237}$ na neytronakh s energiyey 15 Mev)

ABSTRACT: In 1952 σ was measured by the authors for $U^{238}(n,2n)U^{237}$ for E_n = 15 MeV as amounting to 1,5 $\pm$ 0,2 b. As, in the meantime, new values have been published which are in contradiction to those mentioned, measurement was repeated in 1957. A 4π-counter was used for measuring. The value $\sigma_{n,2n}$ was measured from the activity of U^{237} and from the fission products of U^{238}, namely Mo^{99}, Ba^{140}, Ce^{141}. A value of 0,90 $\pm$ 0,15 b was obtained by these measurements. This is in agreement with the value given in reference 1, but in strict contradiction of the value given in reference 2. Comparison with the results given in reference 4 leads to the conclusion that the value of 0,90 b is highly probable.

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Reaction Cross Section $U^{238}(n,2n)U^{237}$ With Neutrons of an Energy of 15 MeV

SOV/89-5-4-9/24

N. P. Martynov, T. P. Timofeyeva, and N. V. Shuvanova participated in the work of chemical preparation. There are 4 references, 2 of which are Soviet.

SUBMITTED: April 17, 1958

Card 2/2

21(7)
AUTHORS: Lebedev, P. P., Zysin, Yu. A., Klintsov, Yu. S.,   SOV/89-5-5-2/27
             Stsiborskiy, B. D.

TITLE: The Neutron Yield From Inelastic Interaction of Neutrons of
             14 MeV Energy With Nuclei and the Reaction Cross Sections
             (n,2n) (Vykhod neytronov pri neuprugom vzaimodeystvii ney-
             tronov s energiyey 14 Mev s yadrami i secheniye reaktsii
             (n,2n))

PERIODICAL: Atomnaya energiya, 1958, Vol 5, Nr 5, pp 522-525 (USSR)

ABSTRACT: The quantities η_a and σ_{in} were measured for 10 nuclei
             (natural isotope-composition). η_a is the number of neutrons
             produced by inelastic scattering of neutrons with a nucleus.
             The relative variation of the entire neutron flux and the
             weakening of the primary neutron flux after passage through
             the target is determined. Measurements were carried out in
             spherical geometry. The neutron source was located in the
             center.
Card 1/4   The relative weakening of the primary neutron flux was measured

The Neutron Yield From Inelastic Interaction of Neutrons of 14 MeV Energy
With Nuclei and the Reaction Cross Sections (n,2n)

by means of a copper indicator $\left[Cu^{63}(n,2n)Cu^{62} \right]$. The re-
lative variation of the total neutron flux was measured by
means of a boron counting-tube in the paraffin block, which
is described (Ref 2).
Measuring errors could not be kept below an average of ± 2 %.
The values for σ_{in} agree with previously obtained results.
The values η_a are higher by 10-15 % than those mentioned
by reference 1. In a similar manner the values $(\sigma_{n,2n}-\sigma_c)$
differ in the same direction as η_a from the values mentioned
(Ref 1). The following measuring results were obtained:

Element	η	σ_{in}, b	$(\sigma_{n,2n}-\sigma_c)$, b
Fe	$1,20\pm0,15$	$1,44\pm0,04$	$0,26\pm0,1$
Cu	$1,34\pm0,15$	$1,50\pm0,07$	$0,47\pm0,1$
Mo	$1,64\pm0,2$	$1,60\pm0,15$	$1,0\pm0,2$

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The Neutron Yield From Inelastic Interaction of Neutrons of 14 MeV Energy With Nuclei and the Reaction Cross Sections (n,2n)   SOV/89-5-5-2/27

Element	η	σ_{in}, b	$(\sigma_{n,2n} - \sigma_c)$, b
Cd	$1,74 \pm 0,2$	$1,87 \pm 0,2$	$1,38 \pm 0,3$
Sn	$1,81 \pm 0,2$	$1,83 \pm 0,2$	$1,48 \pm 0,3$
Sb	$1,82 \pm 0,2$	$1,85 \pm 0,13$	$1,52 \pm 0,2$
Hg	$1,86 \pm 0,2$	$2,46 \pm 0,1$	$2,02 \pm 0,2$
Pb	$1,92 \pm 0,2$	$2,46 \pm 0,1$	$2,18 \pm 0,2$
Bi	$1,88 \pm 0,2$	$2,58 \pm 0,1$	$2,18 \pm 0,2$
U	$2,8 \pm 0,25$	$2,91 \pm 0,14$	-

A. A. Malinkin took part in the experiments. There are 1 figure, 1 table, and 10 references, 2 of which are Soviet.

SUBMITTED: April 17, 1958
Card 3/4

VLASOV, V.A.; ZYSIN, Yu.A.; KIRIN, I.S.; LBOV, A.A.; OSEYAYEVA, L.I.; SEL'CHENKOV, L.I.

[Yield of certain fragments in Th^{232} fission by 14.3 Mev. neutrons] Vykhody nekotorykh oskolkov pri delenii $Th232$ neitronami s energiei 14,3 mev. Moskva, Glav. upr. po ispol'zovaniiu atomnoi energii pri Sovete Ministrov SSSR, 1960. 11 p. (MIRA 17:4)

S/089/60/008/04/05/009
B113/B017

AUTHORS: Zysin, Yu. A., Kovrizhnykh, A. A., L'vov, A. A.,
             Sel'chenkov, L. I.

TITLE: Cross Section of the Reaction $Th^{232}(n, 2n)$ Th^{231} With
             Neutrons of the Energy 14.7 Mev

PERIODICAL: Atomnaya energiya, 1960, Vol. 8, No. 4, pp. 360-361

TEXT: The cross section was determined by a method which is based on the
activity of Th^{231} and the fission fragments Mo^{99} and Ba^{140}. The method
has been described in a paper by G. P. Antropov et al. in Atomnaya
energiya, 1958, Vol. 5, No. 4, p. 456. 14.7-Mev-neutrons were obtained
by means of a low-voltage linear accelerator from the reaction $D(T,n)He^{4}$.
Mixture irradiated: $Th(NO_3)_4 \cdot 4 H_2O$, U_3O_8. Six irradiations were made, the
irradiation lasting from three to eleven hours, the total neutron
emission of the individual samples was at $(2 \div 6) \cdot 10^{14}n$. According to a

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Cross Section of the Reaction Th^{232}(n, 2n) Th^{231} S/089/60/008/04/05/009
With Neutrons of the Energy 14.7 Mev   B113/B017

formula given, the reaction cross section of Th^{232}(n, 2n) Th^{231} with
14.7-Mev-neutrons is found to be $\sigma^{Th}_{n,2n}$ = (0.65 $\pm$ 0.15) barn. The authors
thank K. A. Vlasov, A. S. Kovaldov, V. M. Lartsev, V. R. Nagina,
N. D. Osyayev for their assistance.

SUBMITTED: October 21, 1959

VB

Card 2/2

32988

S/641/61/000/000/015/033
B104/B102

24.6600

AUTHORS: Vlasov, V. A., Zysin, Yu. A., Kirin, I. S., Lbov, A. A.,
Osyayeva, L. I., Sel'chenkov, L. I.

TITLE: Yields of some fragments in Th^{232} fission by 14.3 Mev neutrons

SOURCE: Krupchitskiy, P. A., ed. Neytronnaya fizika; sbornik statey.
Moscow, 1961, 235-240

TEXT: The yields of Ga^{73}, Br^{83}, Sr^{89}, Y^{91}, Zr^{95}, Mo^{99}, Ag^{111}, Cd^{115}, Te^{129m},
Te^{132}, and Ce^{141} fragments produced in Th^{232} fission were studied by
radiochemical methods. The 14.3 Mev neutrons were obtained from $D(T,n)He^4$
reactions, the deuterons of ~ 150 kev were obtained from a low-voltage
linear accelerator. The specimens were irradiated with a neutron flux of
approximately $(0.7-2)\cdot 10^8$ neutr/cm^2·sec for 5-25 hr. The hermetically
sealed cylindrical containers contained up to 90 g $Th(NO_3)_4 \cdot 4H_2O$. The
irradiated thorium nitrate was dissolved in water. From this solution the
fission fragments were isolated by four different methods and identified
by measuring their β-activity. The absolute fragment yield was determined
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Yields of some fragments in ...

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S/641/61/000/000/015/033
B104/B102

by a method in which the sum of the relative yields of all fission fragments obtained by interpolation of their mass distribution curves was equated to 200%. In this case triple fissions are assumed to be negligible. The results are summarized in Table 2. A comparison with the results obtained by A. Turkevich (Phys. Rev., 84, 52 (1951); Phys. Rev., 89, 552 (1953)) shows that with increasing neutron energy the fragment yields in symmetrical fission increase. The authors thank K. N. Borozdina, A. S. Kovaldov, V. M. Lartsev, N. D. Osyayev, E. V. Plyusnina and R. N. Sorokina for their help with these studies. There are 1 figure, 3 tables, and 10 references: 3 Soviet and 7 non-Soviet. The four most recent references to English-language publications read as follows: Katcoff S., Nucleonics, 16, 4, 78 (1958); Steinberg E. P., Glendenin L. E., report no. 614, held at the First International Conference on the Peaceful Uses of Atomic Energy, Geneva, 1958; Strominger D., Hollander J. M., Seaborg G. T., Rev. Mod. Phys., 30, 585 (1958); Leachman R., report no. 2467, held at the Second International Conference on the Peaceful Uses of Atomic Energy, Geneva, 1958.

Table 2. Fragment yields in 14.3-Mev neutron induced Th^{232} fission.
Legend: (1) isotope measured, (2) relative yield, (3) absolute yield, in %

Card 2/2

ANTROPOV, G.P.; ZYSIN, Yu.A.; KOVRIZHNYKH, A.A.; TSAREV, V.P.

Fast neutron spectrometer. Prib. i tekh.eksp. 6 no.4:30-33
Jl-Ag '61.

(Spectrometer)   (MIRA 14:9)

SKLIZKOV, G.V.; PAVLOVSKIY, A.I.; ZYSIN, Yu.A.

Discharge device for precise commutation of power pulses. Prib.i
tekh.eksp. 6 no.5:89-91 S-O '61.
                    (Pulse techniques (Electronics))   (MIRA 14:10)

AM4027870   BOOK EXPLOITATION   S/

Zy*sin, YU. A.; Lbov, A. A.; Sel'chenkov, L. I.

Fission yields and their mass distribution; a manual (Vy*khody* produktov deleniya
i ikh raspredeleniye po massam; spravochnik). Moscow, Gosatomizdat, '63. 0117
p. illus., biblio., tables. 3,500 copies printed.

TOPIC TAGS: nuclear fission, fission fragments, fission fragment yield, fission
fragment mass distribution, asymmetric fission, fine structure, excitation energy,
fission induced by Gamma rays, fission induced by charged particles, decay chain

PURPOSE AND COVERAGE: This manual gathers together and generalizes extensive
experimental material on yields of fission products and the mass distribution of
fission fragments accumulated from 1939 through 1962. It covers nuclear fission
induced by neutrons, γ rays, charged particles of excitation energy up to 100
MeV, and spontaneous fission. The data on the fission product yields are tabula-
ted. Some general conclusions are drawn concerning the laws governing the mass
distribution of fission fragments. The book is intended for engineering-physi-
cists, scientific workers, and engineers working in the field of nuclear engi-
neering and nuclear physics.

Card   1/2

AM4027870

TABLE OF CONTENTS

SUB CODE: PH, NS   SUBMITTED: 01Aug63   NR REF SOV: 049

OTHER: 194   DATE ACQ: 20Mar64

Card   2/2

SAKHAROV, A.D., akademik; LYUDAYEV, R.Z.; SMIRNOV, Ye.N.; PLYUSHCHEV, Yu.I.;
    PAVLOVSKIY, A.I.; CHERNYSHEV, V.K.; FEOKTISTOVA, Ye.A.; ZHARINOV, Ye.I.;
    ZYSIN, Yu.A.

Magnetic cumulation. Dokl. AN SSSR 165 no.1:65-68   N '65.

(MIRA 18:10)

L 7085-66   EWT(1)   IJP(c)

ACC NR: AP5027837   SOURCE CODE: UR/0020/65/165/001/0065/0068

AUTHOR: Sakharov, A. D. (Academician); Lyudayev, R. Z.; Smirnov, Ye. N.; Plyushchev,
Yu. I.; Pavlovskiy, A. I.; Chernyshev, V. K.; Feoktistova, Ye. A.; Zharinov, Ye. I.;
Zysin, Yu. A.

ORG: none

TITLE: Production of very high magnetic fields by explosives

SOURCE: AN SSSR. Doklady, v. 165, no. 1, 1965, 65-68

TOPIC TAGS: pulsed magnetic field, flux compression, high field pulse, implosive
flux compression, explosive flux compression, betatron particle acceleration, high
density plasma, plasma accelerator/ MK 1, MK 2

ABSTRACT: Experiments with the MK-1 and MK-2 explosion devices for the production of
very high magnetic field pulses are described. The MK-1 device, which is based on the
implosion of an axial flux within a metal shell, essentially resembles the arrangement
described by Fowler and others (J. Appl. Phys. 31, 1965, 588). The MK-2, which works
on the principle of the expulsion of the field from the solenoid and the subsequent
compression of the field by the walls of the coaxial liner, is described here for the
first time. Field intensities of 1×10^6 oe were obtained in experiments with an MK-1
using aluminum liners about 100 mm in diameter. In a subsequent experiment with a
stainless steel liner with a copper plated inner surface, a field intensity of

Card 1/3.   UDC: 538.4

L 7085-66

ACC NR: AP5027837

25 x 10^6 oe was achieved by imploding the liner to a 4-mm diameter. A field intensity of 5 x 10^6 oe in a volume of 100 cm^3 was produced by a copper liner 300 mm in diameter using the MK-2 as the source of the initial field. The MK-2 has a central conductive cylinder enclosed in a coaxial helical solenoid. On one end of the solenoid is a solid cup. A hole in the bottom of the cup holds the end of the central cylinder (see Fig. 1). The central cylinder is filled with an explosive which is ignited from the

Exploding tube — Explosive
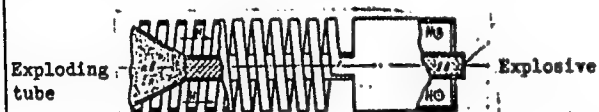
Fig. 1. The MK-2 device

end opposite that holding the cup. The solenoid cylinder system forms the circuit through which a battery of capacitances is discharged. At the peak value of the dis-charge current, the expanding conical flare of the cylinder created by the propagating explosion touches the end of the solenoid. The explosion's further development is equivalent to moving a cone into the solenoid and shorting its turns until the cone reaches the cup. At this moment a coaxial is formed whose length and inductance grow smaller as the detonation propagates further along the cylinder. The process is accompanied by a corresponding increase in current and field intensity resulting from compression of the flux. Currents of 5 x 10^7 amp (occasionally up to 1 x 10^8 amp) at an inductance value of 0.01 µH were obtained, and field intensities of 1 to

Card 2/3

L 7085-66

ACC NR: AP5027837

1.5×10^6 oe were recorded within a volume of several liters. An energy of 1 to 2×10^7 J was stored in the field, which amounts to about 10 to 20% of the energy released during the propagation of the explosion within the length of the cup. A receiver of electromagnetic energy was connected to the MK-2 directly or via a transformer, depending on whether the receiver was of low or high inductance. About 50% of the explosive energy was transferred to the receiver by the latter method, which also permits a spatial separation of the sender and makes possible multi-stage arrangements. In the first stage, the initial field is created by a permanent magnet. The second and the subsequent stages amplify the field received from the preceding stage. Energy transfer was also accomplished by breaking the current-carrying circuit by means of an additional explosive charge and using the breaking surge for the transfer. More than 50% of MK-2 output was transferred by this method. A special MK device has been created for iron-free air core betatrons as described by Pavlovskiy and others (DAN, 160, no. 1, 1965, 68), and experiments have been carried out with electrodynamic accelerators of the coaxial type. Orig. art. has: 3 figures.

[FP]

SUB CODE: EM, NP/ SUBM DATE: 23Aug65/ ORIG REF: 002/ OTH REF: 001/ ATD PRESS: 4143

aw

Card 3/3

PAVLOVSKIY, A.I.; KULESHOV, G.D.; SKLIZKOV, G.V.; ZYSIN, Yu.A.; GERASIMOV, A.I.

Heavy-current air-core betatrons. Dokl. AN SSSR 160 no.1:68-70
Ja '65.   (MIRA 18:2)

1. Submitted November 16, 1964.

ZYSINA-MOLOZHEN, A. M.

"Determination of Turblent Transfer Constants in an Compressible Gas FlOW."

Report submitted for the Conference on Heat and Mass Transfer, Minsk, BSSR, June 1961.

YUDIN, I. M. and KUTATELADZE, S. S.

"Eksperimental'noye issledovaniye teploperedachi pri kipenii rtuti"
(Experimental Investigation of Heat Transfer during the Boiling of
Mercury), Sovetskoye kotloturbostroyeniye, 1939, No. 9, pp. 279-283.

ZYSINA, L. (g. Ufa)

At the door of a dressmaking and tailoring establishment, Prom.
koop. 13 no.3:19 Mr '59.
(Ufa—Clothing industry)   (MIRA 12:4)

KUTATELADZE, Samson Semenovich. Prinimali uchastiye: LEONT'YEV,
A.I.; BORISHANSKIY, V.M.; ZYSINA, L.M., doktor tekhn. nauk,
retsenzent; GORDOV, A.N., kand. fiz.-mat. nauk, red.;
ONISHCHENKO, R.N., red. izd-va; MITARCHUK, G.A., red. izd-va;
SHCHETININA, L.V., tekhn. red.

[Fundamentals of the heat transfer theory] Osnovy teorii teplo-
obmena. Izd.2., dop. i perer. Moskva, Mashgiz, 1962. 455 p.
(MIRA 15:7)

(Heat—Transmission)

ZYSINA, L. M.   PA 16/49T46

USSR/Engineering   May/Jun 48
    Turbines - Blades
    Gas Flow - Measurements

"Small Gas Dynamics Testing Bench of the Central
Boiler and Turbine Institute imeni I. I. Polzunov,"
L. M. Zysina, Cand Tech Sci, $1\frac{1}{2}$ pp

"Kotloturbostroye" No 3

Describes arrangements for studying gas flow through
blading of new turbine designs. Includes five
photographs.

16/49T46

ZYSINA - MOLOZHEN, L. M.

PROCESSES AND PROPERTIES INDEX

The effect of pressure ON THE MECHANISM OF STEAM FORMATION IN A BOILING LIQUID. L. M. Zysina-Molozhen and S. S. Kutateladze. Zhur. Tekh. Fiz. 20, 110-1, (1950) Jan. (In Russian).

An experimental study of the mechanism of formation of vapor bubbles in a boiling liquid, under conditions of free circulation, showed the inadequacy of formulas frequently used for the calculation of the intensity of heat exchange emanating from the German school of workers (Fritz, Physik. Z., No. 11(1935); Jacob and Linke, ibid., No. 6(1936)); these formulas do not reflect the true role played by pressure in the mechanism of boiling.

METALLURGICAL LITERATURE CLASSIFICATION

ZYSINA-MOLOZHEN, L. M.

USSR/Physics - Hydrodynamics

Nov 52

"Turbulent Boundary Layer During Longitudinal Pressure Drop," L. M. Zysina-Molozhen

"Zhur Tekh Fiz" Vol 22, No 11, pp 1756-1772

Describes the results of experimental investigation into the influence of longitudinal pressure drop on the development of boundary layer over which a compressible gas a surface over which a compressible gas flows. Results of experiments agree with

236T98

computations. On basis of an analysis of the experimental data, author recommends certain considerations in the computation of boundary layer in the turbulent and transitional regions.

236T98

Zysina - Molozhen, L·M.

Abst Journal: Referat Zhur - Mekhanika, No 12, 1956, 8362

Author: Zysina-Molozhen, L. M.

Institution: None

Title: Certain Data on the Number of Steam-Formation Centers on Technical Heating Surfaces

Original Periodical: Coll: Vopr. teploobmena pri izmenenii agregatnovo sostoyaniya veshchestva, Moscow-Leningrad, 1953, Gosenergoizdat, 168-172

Abstract: Results are given of microscopic photography of the process of bubble boiling on a horizontal plate.

It is shown how the thermal load, pressure, and the state of the heating surface affect the number of steam-formation surface and the frequency at which the steam bubbles break away. The experiments were performed with water and with several aqueous solutions at pressures from one to 5 atm under moderate heat-flux densities.

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USSR/Physics - Gas dynamics

                                                           FD-998

Card 1/1   : Pub. 153 - 2/24

Authors   : Zysilna-Molozhen, L. M., and Shapiro, I. G.

Title   : Interferometric investigation into the circulation around cascades of turbine sections

Periodical   : Zhur. tekh. fiz., 24, No 6, 978-938, Jun 1954

Abstract   : Expound results of a comparative interferometric investigation of two cascades of flat turbine sections. Compare data of optical investigation with results of pneumometric investigations. The work was carried out on the optical bench of the gas-dynamics laboratory of Division [otdel] No. 6 of TsKTI (central Scientific Research Boiler and turbine Institute) with the assistance of VNIIM (All-Union Scientific-Research Institute of Metrology).

Institution   : -

Submitted   : July 20, 1953

ZYSINA-MOLOZHEN, L.M., kandidat tekhnicheskikh nauk

Calculation of losses in profile cascades of turbomachinery. [Trudy] TSKTI no.27:20-51 '54.   (MLRA 8:12)
                    (Gas flow) (Gas turbines)

ZYSINA,-MOLOZHEN,L.M., kandidat tekhnicheskikh nauk; SHAPIRO,I.G.,
inzhener

Interferometric investigation of flow through a cascade of
compressor blades. [Trudy] TSKTI no.27:134-151 '54.
(MIRA 8:12)
(Gas flow) (Interferometry) (Compressors)

Subject   : USSR/Engineering   AID P - 1327

Card 1/1   Pub. 110-a -- 9/19

Authors   : Zysin, V. A., Zysina-Molozhen, L. M., Kand. of Tech. Sci.,
                 Polyakov, K. S. and Shapiro, I. C., Engineers

Title   : Interferometrical study of a flow around turbine bladings
                 at trans-and supersonic speed

Periodical   : Teploenergetika, 2, 38-42, F 1955

Abstract   : The results of interferometrical studies are outlined con-
                 cerning the flow at trans- and supersonic speed around
                 turbine bladings at different values of the inflow angle
                 and of the pitch. Based on experimental data of a two-
                 dimensional flow some considerations are presented rela-
                 tive to the most favorable parameters of the bladings
                 analyzed from the point of view of blade losses. Photos,
                 charts, 2 Russian references (1953-1954).

Institution   : Central Scientific Research Institute of Boilers and
                 Turbines

Submitted   : No date

ZHUKOVSKIY,V.S., doktor tekhnicheskikh nauk, professor; ZHUKOVSKIY, M.I., kandidat tekhnicheskikh nauk; ZYSINA-MOLOZHEN, kandidat tekhnicheskikh nauk; MARKOV,N.M., kandidat tekhnicheskikh nauk; SKNAR',N.A., kandidat tekhnicheskikh nauk; TYRYSHKIN,V.G., kandidat tekhnicheskikh nauk

M.E.Deich's book "Technical gas dynamics." Reviewed by V.S.Zhukovskii and others. Teploenergetika 2 no.1:62-64 Ja '55.

(MLRA 8:9)

(Turbines--Fluid dynamics) (Gas flow) (Deich, M.E.)

ZYSINA-MOLOZHEN, L. M.

Subject	:	USSR/Engineering

AID P - 1832

Card 1/1   Pub. 110-a - 9/16

Authors   : Zysina-Molozhen, L. M., Kand. of Tech. Sci., and
Shapiro, I. G., Eng.

Title   : Some data on the supersonic flow through the turbine
blading

Periodical : Teploenergetika, 3, 34-37, Mr 1955

Abstract   : The authors make an interferometric study of
supersonic velocities accompanied by the
emergence of jumps of compression and the resulting
increase of losses in turbine blading. From inter-
ferograms they attempt to obtain data about ways to
remove possibilities of locking compression jumps
in inter-blading disk spaces. Nine photographs and
diagrams.

Institution: Central Institute of Boilers and Turbines

Submitted : No date

Subject	:	USSR/Engineering	AID P - 2766
Card 1/1		Pub. 110-a - 8/14	
Author	:	Zysina-Molozhen, L. M., Kand. Tech. Sci.	
Title	:	Approximate method of calculating losses in blading	
Periodical	:	Teploenerg., 9, 43-48, S 1955	
Abstract	:	An analysis of experimental data compared with mathematical analysis in the computation of different blade-entrance angles and their corresponding losses. Nine diagrams. Six Russian references, 1940-1954.	
Institution	:	Central Boiler and Turbine Institute	
Submitted	:	No date	

USSR/Physics - Aerodynamics

FD-3207

Card 1/1   Pub. 153-16/28

Author   : Zysina-Molozhen L. M.

Title   : Study of transition from laminar to turbulent flow on the boundary
                layer

Periodical   : Zhur. Tekh. Fiz., 25, No 7, 1280-1287, 1955

Abstract   : Attempt is made to establish a semi-empirical evaluation of the ef-
                fect of the transition region on the flow in the boundary layer.
                This method facilitates the computing of parameters of the transi-
                tional boundary layer, similarly to purely laminar or purely turbu-
                lent flow. The comparison of plotted theoretical and experimental
                curves show satisfactory accuracy of semi-empirical relations of
                the transition region. Nine references, including 3 foreign.

Institution :

Submitted   : December 2, 1954

ZYSINA-MOLOZHEN, L. M.   FD-3208

USSR/Physics - Aerodynamics

Card 1/1   Pub. 153-17/28

Author   : Zysina-Molozhen L. M.

Title   : Some quantitative characteristics of transition from laminar to turbulent
            flow in the boundary layer

Periodical: Zhur. Tekh. Fiz., 25, No 7, 1288-1296, 1955

Abstract : Experimental results obtained in a special wind tunnel (L. M. Zysina-Molozhen,
            Tr. TsKTI, 22, 1952) are analyzed. The boundary layer was studied along a
            plate surface during flow around it by a gradientless stream and a stream with
            longitudinal pressure gradient, or flow around a cascade profile. (L. M. Zy-
            sina-Molozhen, Tr. TsKTI, book 22, 1952) Quantitative characteristics of the
            extent of the transition region could be approximately established. Indebted
            to Drs A. A. Gukhman and L. G. Loytsyanskiy for discussions. Ten references,
            including one US.

Institution: --

Submitted : December 12, 1954

		AID P - 5106

Subject   : USSR/Engineering

Card 1/1   Pub. 110-a - 9/18

Author   : Zysina-Molozhen, L. M., Kand. Tech. Sci.

Title   : Semiempirical method for calculating the parameters of
              a two-dimensional boundary layer in the transition zone.

Periodical : Teploenergetika, 10, 41-47, O 1956

Abstract   : The above method is based on the generalization of
              experimental data on velocity profiles in the transition
              zone of the boundary layer of a flow around a plate. The
              author considers the calculation of the boundary layer
              with a longitudinal pressure gradient. 10 diagrams.
              15 references.

Institution : Central Institute for Boilers and Turbines

Submitted   : No date

ZYSINA-MOLOZHEN, L. M. Doc Phys-Math Sci -- (diss) "Certain Problems of Resistance and Heat Loss ~~Relating to~~ during Doktricheskoye [?] ~~FISWXXXXXX~~ Streamline Flow," Len, 1957. 30 pp 20 cm. (Min of Higher Education USSR, Len Polytechnic Inst im M. I. Kalinin), 100 copies (KL, 28-57, 109)

- 2 -

AUTHORS: Zysina-Molozhen, D.M. (Leningrad)   24-10-4/26

TITLE: Approximate method of calculation of the heat transfer
          in blade cascades. (Priblizhennyy metod rascheta
          teplotdachi v reshetkakh profiley).

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh
          Nauk, 1957, No.10, pp. 28-35 (USSR)

ABSTRACT: This paper was read at the 8th Conference on Heat Exchange
          in Gas Turbines convened by ENIN AN SSSR, Kiev, Oct.13, 1955.
          An approximate method is described of calculating the
          average coefficient of heat transfer which is suitable for
          carrying out the preliminary calculations. The author
          considers a lattice which is diagrammatically represented
          in Fig.1, p.29, and the investigation is limited to the
          flow through the cascade between the planes 1_o located
          at a great distance in front of the lattice and 2_{oo}
          located at a great distance behind the lattice, where all
          the non-uniformities of the flow due to the presence of the
          lattice have been equalled out. The section passing
          through the trailing edge plane is denoted by 3 and it is
          assumed that at some distance from the plane of the trailing
          edges in the section denoted by 2 the temperature and the
          speed boundary layers of the trailing edges are identical,
Card 1/3 which is correct only for $N_{Pr} \leqslant 1$. With these and further

Approximate method of calculation of the heat transfer in blade
, cascades.

angles for all the Reynold number values under
consideration.
There are 2 figures and 10 references, 9 of which are
Slavic.

SUBMITTED: December 14, 1955.

AVAILABLE: Library of Congress.

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ZYSINA-MOLOZHEN, L. M., SHAPIRO, I. G.   (Leningrad)

"On the Heat Transfer in Turbulent Compressible Flows."

report presented at the First All-Union Congress on Theoretical and Applied
Mechanics, Moscow, 27 Jan - 3 Feb 1960.

PHASE I BOOK EXPLOITATION   SOV/4519

Gukasova, Yekaterina Aleksandrovna, Mikhail Isaakovich Zhukovskiy, Anatoliy
    Mikhaylovich Zavadovskiy, Larisa Mikhaylovna Zysina-Molozhen, Nikolay Akimovich
    Sknar', and Vsevolod Georgiyevich Tyryshkin

Aerodinamicheskoye sovershenstvovaniye lopatochnykh apparatov parovykh i gazovykh
    turbin (Aerodynamic Improvement of Blading in Steam and Gas Turbines) Moscow,
    Gosenergoizdat, 1960. 340 p. Errata slip inserted. 4,000 copies printed.

Eds.: V.S. Zhukovskiy, Doctor of Technical Sciences, Professor, and S.S.
    Kutateladze, Doctor of Technical Sciences, Professor; Tech. Ed.: O.S.
    Zhitnikova.

PURPOSE: This book is intended for engineers working in turbine-construction plants,
    design offices, and power systems, and may also be used by aspirants and students
    of advanced courses in power-machinery construction at schools of higher education.

COVERAGE: The book discusses aerodynamic methods for investigating, profiling, and
    improving the blading of steam and gas turbines. Methods for calculating the
    potential flow about airfoil cascades and for determining energy losses on the basis

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Aerodynamic Improvement of Blading (Cont.) SOV/4519

of the boundary-layer theory are presented. Also discussed are methods for experimental study of the flow about blades in stationary cascades (with consideration of three-dimensional phenomena) and on rotating models. A special chapter (IX) treats the results of aerodynamic profiling of new blade cascades. The results presented are based on work performed at TsKTI imeni I.I. Polzunov. The authors thank Professor L.G. Loytsyanskiy for his advice. There are 124 references: 106 Soviet, 10 English, and 8 German.

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Aerodynamic Improvement of Blading (Cont.)   SOV/4519

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